CLAIMS

We claim:

    1.   A method for unloading blocks of a hierarchical database, the method comprising the steps of:

5   reading into a buffer pool, overflow area data and a window of blocks of a hierarchical database;

    placing the overflow area data and the window of blocks in an addressable data space, the placement of the scan cylinders amount of blocks being at locations in the data space that correspond to the block locations in the hierarchical database from which they are read;

10   after overflow area data and the window of blocks has been placed in the data space, commencing hierarchical unloading of the segments placed in the data space while continuing the read of blocks into the buffer pool and placement of blocks into the data space.

15   2.   The method of claim 1 in which the window of blocks is a scan cylinders amount of blocks.

    3.   The method of claim 1 in which segments are unloaded from the data space to a new data base.

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4.   The method of claim 3 in which as the segments are unloaded from the data space to a new data base, the RBA that an unloaded segment will exhibit in the new data base is computed.

5.   The method of claim 4 in which the RBA that an unloaded segment will exhibit in the new data base is computed by

determination of the block number of the block to which the unloaded segment is to be placed;

multiplication of the determined block number by the block size to obtain a product;

addition to the product, the difference between the block size and a state of a counter to arrive at a future RBA for the unloaded segment.

6.   The method of claim 5 in which the counter is one of plural counters established to correspond, one to one, with a plurality of the blocks to be unloaded, the counter representative of the size of the block to which it corresponds.

7.   The method of claim 5 in which the counter has the capacity to indicate the size of the block to which the segment will be loaded and in which the state of the counter is indicative of the size of the block to which the segment will be loaded minus the cumulative size of the segments which have previously been loaded to that block.

8.   The method of claim 5 further comprising the step of subtracting from the state of the counter, the size of the segment being unloaded.

9.   The method of claim 5 in which the future RBA and the present RBA of the segment

5   are correlated.

10.   The method of claim 5 further comprising:

correlating and ordering present and future RBA for a plurality of segments in a data set under reorganization;

10   scanning a database to determine for a selected segment, whether that selected segment participates in a logical relationship with a segment in the data set under reorganization;

upon finding a segment that participates in a logical relationship with a segment in the dataset under reorganization, comparing the logical pointer of the found segment with

15   the correlation of present and future relative addresses for plural segments in the dataset under reorganization to find the present relative address that corresponds to the logical pointer of the found segment; and

upon finding the corresponding present relative address, replacing the logical pointer of the found segment with the future relative address that is correlated with the

20   corresponding present relative address.

11. The method of claim 9 in which the correlation is through a table.

12. The method of claim 11 in which the table is indexed.

5   13. A method for unloading blocks of a hierarchical database, the method comprising the steps of:

reading into buffers and thereafter into a data space, the overflow of a dataset and a selected amount of blocks of a hierarchical database;

after the overflow and the selected amount of blocks have been read into the data

10 space, unloading in an algorithmic order, segments from the data space; and

progressively continuing the read of blocks into the data space as the unload from the data space progresses.

14. The method of claim 13 in which the selected amount of blocks is a scan cylinders

15 amount of blocks.

15. The method of claim 13 in which, after a block has been unloaded of data from the data space, releasing back to the operating system the space of the data space in which the unloaded block resided.

16.   The method of claim 13 in which the selected amount of blocks behind an unload point in the algorithmic order of unloading, space in the data space occupied by previously loaded blocks is released back to the operating system.

17.   The method of claim 15, further comprising the step of examining the data space to determine whether residual data of a block remains in the data space.

18.   The method of claim 17 in which the examination of the data space is by a counter.

19.   The method of claim 15 in which the data space is monitored for accesses to there residing segments.

20.   A storage medium embedded with instructions that operate in an IMS computer environment to

read into a buffer pool, overflow area data and a scan cylinders amount of blocks of a hierarchical database;

place the overflow area data and the scan cylinders amount of blocks in an addressable data space, the placement of the scan cylinders amount of blocks being at locations in the data space that correspond to the block locations in the hierarchical database from which they are read;

after overflow area data and the scan cylinders amount of blocks has been placed in the data space, commence hierarchical unloading of the segments placed in the data space while continuing the read of blocks into the buffer pool and placement of blocks into the data space.

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21. The medium of claim 20 being magnetic tape.

22. The medium of claim 20 being a read only memory storage medium.

10 23. The medium of claim 20 being a disk.

24. The storage medium of claim 20 being further embedded with instructions that operate in an IMS computer environment for

computation of the RBA that each unloaded segment will exhibit in the a data base

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determination of the block number of the block from which the segment is taken;

multiplication of the determined block number by the block size to obtain a product;

20 addition to the product, the difference between the block size and a state of a counter to arrive at a future RBA for that segment.

25. A method of resolving logical relationships in an IMS database system, the method comprising the steps of:

correlating and ordering according to the method of claim 5, present and future relative addresses for plural segments in a dataset under reorganization;

scanning a database to determine for a selected segment, whether that selected segment participates in a logical relationship with a segment in the dataset under reorganization;

upon finding a segment that participates in a logical relationship with a segment in the dataset under reorganization, comparing the logical pointer of the found segment with the correlation of present and future relative addresses for plural segments in the dataset under reorganization to find the present relative address that corresponds to the logical pointer of the found segment; and

upon finding the corresponding present relative address, replacing the logical pointer of the found segment with the future relative address that is correlated with the corresponding present relative address.

26. A method for improving the physical to hierarchical correspondence for a plurality of segments in a dataset of a hierarchical database, the method comprising the steps of:

determining in a first selected algorithmic order, a future relative address of each of the plural segments in relation to a database location if the segments were to be positioned

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sequentially according to the selected first algorithmic order, the selected first algorithmic order being expressive of a selected hierarchical relationship of the plural segments;

recording the determined future relative address of each of the plural segments;

recording the present relative address of each of the plural segments;

5 replacement of the present relative address with the determined future relative address for each of the plural segments;

correlating the present and determined future relative addresses for each of the plural segments;

ordering the correlation of the present and determined future relative addresses

10 according to the present relative addresses;

loading a data base with the plural segments.

27. The method of claim 26 in which the plural segments are loaded in the data space in a second algorithmic order.

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28. The method of claim 27 in which the second algorithmic order expresses an algorithm expressed in the selected first algorithmic order.

29. The method of claim 26 further comprising the steps of:

20 scanning a database having segments that participate in logical relations with one or more of the plural segments in the dataset;

after finding in the scanned database, a segment that participates in a logical relationship with a segment in the dataset, comparing the logical pointer of the found segment with the correlation of present and future relative addresses for the plural segments in the dataset to find the present relative address that corresponds to the logical pointer of the found segment; and

after finding the present relative address that corresponds to the logical pointer of the found segment, replacing the logical pointer of the found segment with the future relative address that is correlated with the present relative address that corresponds to the logical pointer of the found segment.

30.   The method of claim 29 in which the plural segments are loaded in the data space in a second algorithmic order.

31.   The method of claim 30 in which the second algorithmic order expresses an algorithm expressed in the first selected algorithmic order.

32.   A method for advance RBA resolution in reorganization of hierarchical databases, the method comprising the steps of:

establishing a counter having a state indicative of a location in a proxy dataset that correlates to the size of a block to be loaded, the state of the counter being used to determine a relative byte address (RBA) for a segment;

reading, according to an algorithmic order, each of a plurality of segments taken from a disorganized dataset of a hierarchical database;

in correspondence with an unload of a read segment of the plurality of segments, revising the state of the counter to contemplate the size of the read segment, the state of the counter used to determine the future RBA of the next read segment in the reorganized dataset;

recordation of the future RBA of the segment next to be read in the algorithmic order; and

recordation of the read segment present RBA.

33.   The method of claim 32 in which the recordation of future RBA's and present RBA's is in a table.

34.   The method of claim 33 in which the table is sorted by present RBA's.

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